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**Information technology — Software process  
assessment —**

**Part 6:**  
**Guide to competency of assessors**

*Technologies de l'information — Évaluation des procédés du logiciel —  
Partie 6: Guide pour la compétence des évaluations*



Reference number  
ISO/IEC TR 15504-6:1998(E)

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## Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/IEC TR 15504-6, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software engineering*.

ISO/IEC TR 15504 consists of the following parts, under the general title *Information technology — Software process assessment*:

- *Part 1: Concepts and introductory guide*
- *Part 2: A reference model for processes and process capability*
- *Part 3: Performing an assessment*
- *Part 4: Guide to performing assessments*
- *Part 5: An assessment model and indicator guidance*
- *Part 6: Guide to competency of assessors*
- *Part 7: Guide for use in process improvement*
- *Part 8: Guide for use in determining supplier process capability*
- *Part 9: Vocabulary*

Annexes A to G of this part of ISO/IEC TR 15504 are for information only.

## Introduction

Conducting a software process assessment in accordance with the provisions of ISO/IEC TR 15504 assumes that the assessment team includes at least one competent assessor. The competent assessor has the responsibility for ensuring that the requirements are met during the assessment.

As described in ISO/IEC TR 15504-3 and ISO/IEC TR 15504-4, rating the assessed processes ultimately depends on the skilled judgment of the assessors. The various elements of ISO/IEC TR 15504 provide the framework within which assessors exercise judgment, working together to remove, or at least reduce to a minimum, any subjective elements. Nevertheless, the achievement of an acceptable level of consistency, repeatability and reliability of results relies on competent assessors with appropriate skills, experience, and knowledge of the software process, of the model for processes described in ISO/IEC TR 15504-2, and of performing assessments as described in ISO/IEC TR 15504-3 and ISO/IEC TR 15504-4.

The competent assessor in a team has the pivotal role of ensuring that other team members collectively have the right blend of specialized knowledge and assessment skills. The competent assessor provides the necessary guidance to the team, and helps to moderate the judgments and ratings made by the other members of the team to ensure consistency of interpretation.

This part of ISO/IEC TR 15504 is concerned with assessor competencies and appropriate education, training and experience including mechanisms that may be used to demonstrate competence and to validate education, training and experience.

This part of ISO/IEC TR 15504 is primarily directed to assessors, to those responsible for the selection and development of assessors, and to sponsors of assessments seeking assurance that an assessor is competent to carry out the task.

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# Information technology — Software process assessment —

## Part 6:

## Guide to competency of assessors

### 1 Scope

This part of ISO/IEC TR 15504 provides guidance for the preparation of assessors to perform software process assessments. It describes mechanisms that may be used to demonstrate assessor competence and to validate an assessor's education, training and experience.

The guidance in this part of ISO/IEC TR 15504 is applicable to an organizational unit or a sponsor of an assessment wishing to select or specify the type of assessors to perform either self-assessments or independent assessments.

The guidance is also applicable to the identification and demonstration of the competencies necessary for the performance of assessments, and to the process of obtaining those competencies.

Guidance on the competence of those who perform process capability determination or process improvement activities is outside the scope of this part of ISO/IEC TR 15504.

### 2 Normative reference

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC TR 15504. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO/IEC TR 15504 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC TR 15504-9:1998, *Information technology — Software process assessment — Part 9: Vocabulary*.

### 3 Terms and definitions

For the purposes of this part of ISO/IEC TR 15504, the terms and definitions given in ISO/IEC TR 15504-9 apply.

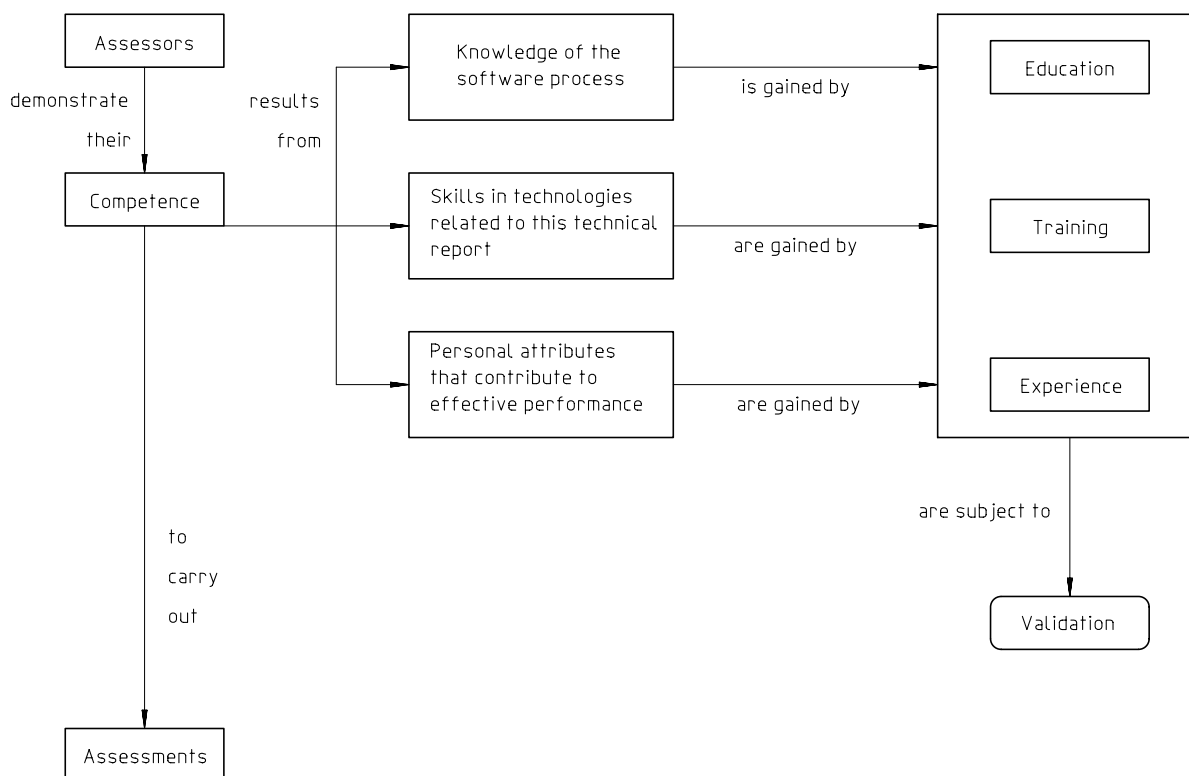
### 4 An overview of the assessor and competence

#### 4.1 The role of the assessor

The role of the assessor, as described in ISO/IEC TR 15504-4, is to assess the software process of an Organizational Unit in a constructive and an objective manner. The assessment should be focused on the process and not the people implementing the process. The role varies depending on the assessment approach as shown in table 1.

**Table 1 — The role of the assessor in different assessment approaches**

| <b>Self-assessment approach</b>   | <b>Independent assessment approach</b>                      |
|---|---|
| Is task and people oriented.  | Is task oriented.   |
| Guides the assessment.  | Controls the assessment.                                    |
| Agrees a rating.  | Delivers a rating.  |
| Promotes discussion.  | Regulates discussion.                                       |
| Works with projects.  | Works separately from projects.                             |
| Uses Organizational Unit's business goals.                                    | May be indifferent to Organizational Unit's business goals. |
| Influences through results obtained, relationships established and expertise. | Influences through position and expertise.                  |
| Seeks commitment.   | Determines process adequacies.                              |
| Is like being a change agent.   | Is like being an auditor.                                   |

**Figure 1 — Entity relationships**



## 4.2 Philosophy

Figure 1 shows the key entities and relationships which may be articulated as follows:

- a) assessors demonstrate their competence to carry out assessments;
- b) competence results from:
  - 1) the knowledge of the software process,
  - 2) skills in the principal technologies of ISO/IEC TR 15504 including: the reference model; assessment models, methods and tools; and rating processes,
  - 3) personal attributes which contribute to effective performance;
- c) the knowledge, skills and personal attributes are gained by a combination of education, training and experience;
- d) an alternative to the demonstration of competence is to validate an intending assessor's education, training and experience.

## 4.3 The process of gaining and maintaining competence

### 4.3.1 Becoming a provisional assessor

A provisional assessor is a person who has reached the required levels of education, training and experience but who has not necessarily participated in assessments conducted according to the provisions of ISO/IEC TR 15504.

A provisional assessor should be trained and experienced in the software process as well as in software process assessment or software quality assessment. A provisional assessor should have received training that satisfies the guidance of ISO/IEC TR 15504. A provisional assessor should also have evidence of an acceptable level of education. (Education is a combination of general education and software education.)

Acceptable levels of education may comprise:

- courses offered by a college or university;
- professional courses organized by recognized local or international bodies;
- vendor sponsored courses;
- employer sponsored courses.

Acceptable levels of training may comprise:

- training provided by recognized local or international bodies;
- training provided by vendors and trainers based on the guidance in this part of ISO/IEC TR 15504.

Acceptable levels of experience may comprise:

- direct "hands-on" experience in specialist areas such as software engineering, software development/maintenance, software quality, or quality assurance;
- management experience overseeing software specialist areas such as software engineering, software development/maintenance, software quality or quality assurance.

### 4.3.2 Becoming a competent assessor

To become a competent assessor, one should have participated in assessments conducted according to the provisions of ISO/IEC TR 15504. Competent assessors should maintain a record of ongoing professional activities to demonstrate continuing competencies of skills, knowledge and training. Assessors' professional activities should be recorded (see Annex D and Annex E) for validation.

### 4.3.3 Maintenance of competence

To maintain their competence, assessors should update their knowledge and skills by engaging in a number of professional activities as well as carrying out further assessments conducted according to the provisions of ISO/IEC TR 15504.

## 5 Assessor competence

### 5.1 The software process

An assessor should be familiar with software development and maintenance including various life cycle models and be able to demonstrate competence in at least one of the process categories of the process model described in ISO/IEC TR 15504-2.

An assessor should also be able to demonstrate familiarity with the software process, and should be experienced with the use of one or more development models such as Waterfall or Rapid Prototyping.

In addition, an assessor should show an understanding of the activities required to support the software process, methods and tools, including when and how they should be applied according to the development model chosen within the application domain in which the assessor is experienced.

An assessor should be familiar with a range of relevant software engineering standards.

### 5.2 Aspects of assessment

Assessors should demonstrate competence in aspects of the assessment pertaining to ISO/IEC TR 15504, particularly the core aspects included in parts 2 to 5 as shown below.

a) Overview of the framework for process assessment

(ISO/IEC TR 15504-1: *Information technology - Software process assessment - Part 1: Concepts and introductory guide*)

b) The process assessment architecture

(ISO/IEC TR 15504-2: *Information technology - Software process assessment - Part 2: A reference model for processes and process capability*)

c) Performing process assessment

(ISO/IEC TR 15504-3: *Information technology - Software process assessment - Part 3: Performing an assessment*, and ISO/IEC TR 15504-4: *Information technology - Software process assessment - Part 4: Guide to Performing assessments*)

d) Compatible assessment models

(ISO/IEC TR 15504-5: *Information technology - Software process assessment - Part 5: An assessment model and indicator guidance; or other compatible model*)

e) Relevant software standards

## 5.3 Personal attributes

### 5.3.1 General



**Figure 2 — Personal attributes**

Assessors should possess the personal attributes shown in figure 2 and described below. Their functional and hierarchical position relative to the Organizational Unit should allow them to take advantage of these attributes.

### 5.3.2 Effective written and verbal communication

Assessors who perform assessments will interact with members of the organizational unit being assessed. They may be feeding back the results of the assessment in the form of written reports and/or presentations. Assessors should be able to communicate the findings of the assessments in a clear, non-judgmental style. Assessment findings should be documented in clear and unambiguous language.

### 5.3.3 Diplomacy

Assessors should act with professionalism and decorum at all times. Independent assessors are guests of the organizational unit being assessed and their conduct should be above reproach at all times.

### 5.3.4 Discretion

Assessors should develop and maintain the confidence of the assessment participants. In particular, assessors should preserve the confidentiality of the results of the assessment and of information received during an assessment in accordance with the terms of any confidentiality agreement included in the assessment constraints (see ISO/IEC TR 15504-3 and ISO/IEC TR 15504-4).

### 5.3.5 Persistence and resistance handling ability

Assessors should be persistent in carrying out the duties that are expected of them. They should be able to resolve any conflicts and handle any resistance that they may experience from assessment participants.

### 5.3.6 Judgment and leadership

It is critical that the Organizational Unit being assessed has confidence in, and respect for individual assessment team members. If they are not respected within the Organizational Unit, then the assessment findings may not be accepted by the organizational unit.

### 5.3.7 Integrity

The assessment team leader, team coordinator and team members should have no conflict of interest in performing the assessment. For example, the risks should be considered including as team members' managers who evaluate the performance of individuals involved in a project being assessed.

### 5.3.8 Rapport

Individuals who might stifle the open and honest flow of information because of their organizational position or personality should not participate in the assessment. Assessors should create an open and honest spirit of communication between people so that project personnel will freely discuss issues.

## 6 Validation of education, training and experience

### 6.1 Overview

Validation of an assessor's education, training and experience is an alternative to the demonstration of competence. The education, training and experience may be validated by a review of these elements. The right balance is of prime importance. In general terms, the balance includes general education and software education together with a combination of training and experience in both software development activities and assessments, including those that are conducted according to the provisions of ISO/IEC TR 15504.

The following factors should be considered when reviewing the education, training and experience of an assessor.

**Duration:** The amount of time the assessor has spent in a particular process category. (See ISO/IEC TR 15504-2 for process categories).

**Range:** The assessor's breadth of exposure to the process categories.

**Depth:** The level of specialization.

**Responsibility:** The extent to which an assessor has held responsibility in terms of both range and depth.

**Currency:** How recent is the assessor's education, training and experience, and the extent to which the assessor's knowledge and skill have been updated.

### 6.2 Education

Assessors should maintain documented evidence of their education in terms of certificates and course outlines for validation. The following levels of educational achievement may be considered as appropriate in the categories of general education and software education.

**General education:** A degree or equivalent in any discipline from an educational establishment.

**Software education:** A degree or equivalent in Computer Science, Software Engineering or a similar discipline.

### 6.3 Training

#### 6.3.1 General

An assessor's training should be recorded (see Annex A) for validation.

Acceptable training would cover at least some aspects of software development.

In order to be familiar with software development and maintenance processes, the assessor should have been trained, or have documented experience, in all the processes in the Engineering (ENG) process category.

Project management or technical leadership training provides a background in the Customer Supplier (CUS) and the Organizational (ORG) process categories. Assessors need not have been trained in each process in the two process categories, but should be familiar and conversant with the topics. Assessors should have extensive training in at least one of the processes in these two process categories.

### 6.3.2 Specific training

An intending assessor should receive specific training that satisfies the guidance in this part of ISO/IEC TR 15504 in order to become a provisional assessor. A training course to cover the requirements and assessment elements of ISO/IEC TR 15504 should comprise at least the following topic areas:

#### 6.3.2.1 Overview of ISO/IEC TR 15504

- Background
- Architecture and principles
- The component parts of ISO/IEC TR 15504
- Vocabulary and definitions
- Comparison of ISO/IEC TR 15504 with other standards and/or methodologies
- Assessment vs. auditing
- How to use the parts of ISO/IEC TR 15504

#### 6.3.2.2 The process assessment architecture

(Based on ISO/IEC TR 15504-2 *A reference model for processes and process capability*)

- The Process Dimension:
  - Life cycle process groupings
  - Process categories
  - Basic and component processes
  - Process purposes
- The Capability Dimension:
  - Capability levels
  - Process attributes
- Rating processes and the process capability level model
- Requirements for compatible models
- How to use ISO/IEC TR 15504-2.

#### 6.3.2.3 Process Assessment

(Based on ISO/IEC TR 15504-3 *Performing an assessment* and ISO/IEC TR 15504-4 *Guide to performing assessments*)

- Defining the assessment input
- Responsibilities
- The assessment process:
  - Planning

- Data validation
- Process rating
- Reporting
- Recording the assessment output
- Selection and use of a documented assessment process:
  - Using indicators
- Selection and use of assessment instruments and tools
- How to use ISO/IEC TR 15504-3 and ISO/IEC TR 15504-4

#### 6.3.2.4 Compatible models for assessment

(Based on ISO/IEC TR 15504-2 *A reference model for processes and process capability*; ISO/IEC TR 15504-4 *Guide to performing assessments*, and ISO/IEC TR 15504-5 *An assessment model and indicator guidance*, or any other compatible model.)

- The purpose of an assessment model
- Compatibility with the reference model:
  - Purpose and scope of the assessment model
  - Model elements and indicators
  - Mapping the assessment model to the reference model
  - Translating assessment results to process profiles
- Selection and use of a compatible model in assessments

### 6.4 Experience

#### 6.4.1 General

Assessors' experience should be recorded (see Annex B) for validation.

Some of the factors which should be taken into account when assessing the relevance of experience in each of the process categories are addressed in 6.4.2 to 6.4.6 below. In lieu of personal experience, the teaching of the particular subject at a suitable level may suffice.

There is an interaction between experience and training: training alone is insufficient. There is also a beneficial interaction between experiences in different roles. For example, team leaders or managers of projects may have had contact with software configuration management and software quality assurance functions. The experience gained may overlap and cover a number of process categories in any particular assignment.

In consequence, recent graduates, or individuals who have spent their entire working lives in a single process category, are unlikely to have accumulated sufficiently broad experience.

#### 6.4.2 Customer-supplier process category

The key element of these practices is joint customer and supplier interaction. Participation in activities within an organizational unit with a recognized quality management system would be helpful. The provision of customer references would aid verification.

### 6.4.3 Engineering process category

Assessors should demonstrate evidence of work experience that shows the use of some of the development practices within this process category. Experience solely in the development of user documentation is insufficient.

### 6.4.4 Support process category

A key feature of these practices is the development of plans and the measurement of performance against these plans. Relevant experience includes developing project or user documentation.

Assessors should be able to demonstrate familiarity with software quality assurance and quality management systems.

### 6.4.5 Management process category

Ideally, assessors should demonstrate that they have project management experience.

### 6.4.6 Organization process category

Assessors should be able to demonstrate experience as managers, consultants or assessors involved in the processes in this process category.

## 6.5 Experience of assessments using ISO/IEC TR 15504

Assessors' experience of conducting assessments using ISO/IEC TR 15504 should be recorded (see Annex C) for validation.

In addition to the training mentioned above, it is recommended that a competent assessor should have:

- participated as a provisional assessor in at least two (2) assessments conducted according to the provisions of ISO/IEC TR 15504; or
- participated as a provisional assessor in one (1) assessment and as an observer in three (3) assessments conducted according to the provisions of ISO/IEC TR 15504.

Training (clause 6.4) and participation in assessments should be formally documented by the trainer or the assessment team leader (which may be the assessor him/herself in a situation where the team comprises only a single member) respectively.

## 6.6 Maintenance of competence

Assessors should maintain (renew) their competence by engaging in a combination of the following activities:

- on the job experience as a competent assessor;
- attending professional seminars;
- giving presentations;
- teaching or developing courses;
- engaging in professional association activities;
- publishing articles or books;
- self training or education using ISO/IEC TR 15504;
- active involvement or leadership in the organizational unit's improvement teams.

Assessors' professional activities should be recorded (see Annex D and Annex E) for validation.

## 6.7 Maintenance of records

The following records should be maintained by all assessors and intending assessors:

- educational certificates and course outlines;
- training records (see Annex A);
- verified records of experience (see Annex B);
- verified records of attending training course(s) in ISO/IEC TR 15504 (see Annex A);
- verified records of participation in assessments conducted according to the provisions of ISO/IEC TR 15504 (see Annex C);
- assessment logs (see Annex D);
- logs of professional activities (see Annex E).



## Annex A (informative)

### Training record

#### A.1 Template for Training Record

The following template may be used to record an assessor's training.

**Table A.1 — Training Record**

| <b>Training course</b> | <b>Description of training</b> | <b>Dates</b> | <b>Hours</b> | <b>Training provider</b> |
|------------------------|--------------------------------|--------------|--------------|--------------------------|
|                        |                                |              |              |                          |
|                        |                                |              |              |                          |
|                        |                                |              |              |                          |
|                        |                                |              |              |                          |
|                        |                                |              |              |                          |
|                        |                                |              |              |                          |

**Training course:** The name of the training course and where held.

**Description of training:** A short overview of the training specifying the covered processes and process categories provided by either the assessor or the training provider.

**Dates:** Start and end dates of training.

**Hours:** Number of hours of training.

**Training provider:** The name and the signature of the training provider with the training provider's official stamp or logo. Alternatively, a certificate of completion bearing this information may be attached.

## Annex B (informative)

### Record of experience

#### B.1 Template for Experience Record

The following is an example of an assessor's record of experience in the software process.

**Table B.1 — Record of experience**

| Process Category | Description of experience | Dates | Level | Verification |
|------------------|---------------------------|-------|-------|--------------|
| CUS              |                           |       |       |              |
| ENG              |                           |       |       |              |
| MAN              |                           |       |       |              |
| SUP              |                           |       |       |              |
| ORG              |                           |       |       |              |
| Other            |                           |       |       |              |

**Process category:** Process categories of the process model in ISO/IEC TR 15504-2. The assessor may describe any other category which may be relevant.

**Description of experience:** Short overviews covering the involvement in different processes within the process categories prepared by the assessor.

**Level:** Level of involvement (i.e. as an assessor, trainee, management, supervisor). Assessors may describe their involvement in the same process category in more than one cell if the level of involvement is different.

**Dates:** Dates of involvement in different categories.

**Verification:** Signature and the position of the supervisor, manager or referee who can verify the assessor's experience in each category.

## Annex C (informative)

### Record of participation

#### C.1 Template for participation record

The following template may be used to record an assessor's participation as a provisional assessor or as an observer in assessments conducted according to the provisions of ISO/IEC TR 15504.

The involvement in assessments should be verified by the sponsor of the assessment, a competent assessor or the assessment team leader. Each assessment is recorded in a format similar to the one below.

**Table C.1 — Record of Participation**

|  |  |
|--|--|
| Name of the person:  |  |
| Date:  |  |
| No. of days for the assessment:  |  |
| Scope of the assessment:   |  |
| Process categories/areas assessed by the person:   |  |
| Organization/Organizational unit:  |  |
| <u>Effective Communications:</u>   |  |
| Were the discussions with the customer reasonable?                                       | Yes/no   |
| Was a satisfactory understanding of ISO/IEC TR 15504 shown?                              | Yes/no   |
| Was the inter team relationship satisfactory?  | Yes/no   |
| <u>Judgment and Leadership:</u>  |  |
| Were the assessment activities completed in a timely manner?                             | Yes/no   |
| Were the interviews conducted satisfactorily?  | Yes/no   |
| <u>Integrity:</u>  |  |
| Reasonable sample taken?   | Yes/no   |
| Range of activity satisfactory?  | Yes/no   |
| Depth of questioning satisfactory?   | Yes/no   |
| Review of results consistent?  | Yes/no   |
| <u>Rapport :</u>   |  |
| Communication - telling the good and bad news:   | satisfactory/unsatisfactory                        |
| Review of the programme:   | satisfactory/unsatisfactory                        |
| Conduct:   | satisfactory/unsatisfactory                        |
| Team Management:   | satisfactory/unsatisfactory                        |
| <u>Comments:</u> (on Diplomacy, Discretion, Persistence and Resistance handling ability) |  |
| <br>   |  |
| <u>Performance:</u>  | Acceptable/More Experience Required/Not acceptable |
| Name and signature of assessment sponsor/competent assessor/ team leader:                |  |

Annex D

(informative)

Assessment log

D.1 Template for assessment log

The following is a sample of an assessment log which may be used to record the details of assessments conducted according to the provisions of ISO/IEC TR 15504 which an assessor has performed as a competent assessor.

Table D.1 — Assessment log

| Date | Assessment | No of days | Categories assessed | Verification |
|------|------------|------------|---------------------|--------------|
|      |            |            |                     |              |
|      |            |            |                     |              |
|      |            |            |                     |              |
|      |            |            |                     |              |
|      |            |            |                     |              |
|      |            |            |                     |              |
|      |            |            |                     |              |
|      |            |            |                     |              |
|      |            |            |                     |              |

**Date:** Start date of the assessment.

**Assessment:** A short description of the assessment to be written by the assessor. The description should include the level of involvement of the assessor (i.e. as team member, team leader, team coordinator) and the number of assessors in the team.

**No of days:** Duration of the assessment in days.

**Categories assessed:** The process categories covered by the assessment.

**Verification:** The signature of a senior manager of the organizational unit assessed, with the stamp or logo. Individual assessment logs may be retained to maintain confidentiality.

## Annex E

(informative)

### Professional activities log

#### E.1 Template for activities log

The following template may be used to record the professional activities of an assessor for maintenance of competence.

Table E.1 — Professional activities log

| Date | Activity | Location | Hours |
|------|----------|----------|-------|
|      |          |          |       |
|      |          |          |       |
|      |          |          |       |
|      |          |          |       |
|      |          |          |       |
|      |          |          |       |
|      |          |          |       |
|      |          |          |       |
|      |          |          |       |

**Date:** Date of the professional activity.

**Activity:** The title and a short description of the activity.

**Location:** Address with room numbers if applicable.

**Hours:** Estimated number of hours of the activity.

## Annex F (informative)

### Mechanisms for demonstrating competence

#### F.1 General

An intending assessor may demonstrate competence in each category through a number of mechanisms. The choice of an acceptable mechanism may be at the discretion of the sponsor of an assessment or the employer of the assessor. The same mechanisms may be used for self evaluation.

The following are examples of such mechanisms.

#### F.2 Example 1 for demonstration

Table 2 is an example of a matrix which may be set up to determine the competence of an assessor. The left hand column with the title "Category of competence" consists of the broad categories of competence which an assessor should demonstrate. Each sub-category demonstrated may be written in the appropriate cell under the appropriate method of demonstration (see table 2). Finally the number of sub-topic categories may be counted to determine the level of competence.

Alternatively, the processes or sub processes (instead of the process categories) may be provided in the left hand column with the title "Category of competence". A tick may be placed in the appropriate cell when competence in the particular sub-category is demonstrated. The score, represented by the total number of ticks, may be used to determine the level of competence.

**Table F.1 — Demonstration of competence against different categories**

| Category of competence | Method of demonstration |                      |                        |       |
|------------------------|-------------------------|----------------------|------------------------|-------|
|                        | Career progression      | Technology awareness | Breadth of performance | Other |
| CUS Process Category   |                         |                      |                        |       |
| ENG Process Category   |                         |                      |                        |       |
| MAN Process Category   |                         |                      |                        |       |
| SUP Process Category   |                         |                      |                        |       |
| ORG Process Category   |                         |                      |                        |       |
| Assessment technology  |                         |                      |                        |       |
| Personal attributes    |                         |                      |                        |       |

#### F.3 Example 2 for demonstration

The following example is based on a joint employee-supervisor review. It encourages assessors to describe their own competencies. This approach is particularly helpful in assessing one's own competence to perform assessments conducted according to the provisions of ISO/IEC TR 15504 and, if used on a regular basis, for building competence over time.

- a) Rate your current level of competence to perform assessments, conducted according to the provisions of ISO/IEC TR 15504, on a scale of High/Medium/Low.
- b) Rate the level of feedback you received on your performance in past assessments (High/Medium/Low).
- c) Conduct a joint discussion with your supervisor or referees to identify the areas of competence which are relevant to your current assignment or any past assignments. List the assignments against each area of competence in a matrix. Then list specific actions taken, personal attributes established, or outcomes produced which you use to demonstrate your competence in each of the relevant areas (table F.2).

**Table F.2 — Demonstration of competence against assignments**

| Areas of competence | Assignments  | How demonstrated |
|---------------------|--------------|------------------|
| Competence 1        | Assignment 1 |                  |
|                     | Assignment 2 |                  |
| Competence 2        | Assignment 1 |                  |
|                     | Assignment 2 |                  |

- d) Rate the need for improvement of your competence in software assessment (High/Medium/Low).
- e) Develop an action plan to improve your competence. Identify the items or areas to be improved, methods of improvement (e.g. training, reading, work assignments, self-paced learning, mentoring) and ways to measure progress. (table F.3)
- f) Implement your plan and describe successes, failures and the reasons.
- g) Identify what needs to be done next.

**Table F.3 — Self improvement**

| Item to improve | Improvement method | Method to measure progress |
|-----------------|--------------------|----------------------------|
|                 |                    |                            |
|                 |                    |                            |

## Annex G

### (informative)

## Mechanisms for validating education, training and experience

### G.1 General

Validation of an assessor's education, training and experience may be performed in a number of ways. The choice of an acceptable mechanism should be at the discretion of the sponsor of an assessment or the employer of the assessor. The same mechanisms may be used for self evaluation.

Example mechanisms are described below.

### G.2 Example 1 for validation

The following mechanism is based on allocating points to a number of criteria. The example includes suggestions in tables G.1 and G.2 of the way points may be distributed, the maximum that may be attained in each category, and the acceptable minimum to become an assessor. The allocation of points may be adjusted based on the duration, range, responsibility, depth, and currency of an assessor's education, training and experience.

Once an assessor's suitability is quantified, the outcome may be as shown in table G.1.

**Table G.1 — Recommended outcome of validation**

| Number of points scored | Recommended outcome                              |
|-------------------------|--|
| 9 or above              | Suitable to be an assessor                       |
| 5 to 8                  | more education, training or experience required. |
| Below 5                 | not suitable at present                          |

### G.3 Example 2 for validation

The following example is a "check list" type of approach that a sponsor or an employer (or the intending assessor) may use to determine the achievement of education, training and experience by examining a number of items. (See tables G.3, G.4, and G.5.) A tick may be placed in the appropriate position after the check.

The sponsor or employer should determine the minimum number of fully adequate areas and partially adequate areas which would enable an assessor to perform an assessment.



Table G.2 — Suggested distribution of points

|  | Points |
|--|--------|
| <b>Education</b> (Maximum = 4, Minimum = 2)  |        |
| Degree or equivalent level of education in any discipline.   | 1      |
| Any formal course in the Software Process, Computer Science, Software Development, Software Engineering, or Software Quality                       | 1      |
| Degree or equivalent level of education in the Software Process, Computer Science, Software Development, Software Engineering, or Software Quality | 2      |
| Assessor education in terms of a national or an international scheme.  | 2      |
| <b>Training</b> (Maximum = 5, Minimum = 3)   |        |
| Customer/Supplier process category [CUS]   | 1      |
| Engineering process category [ENG]   | 1      |
| Management process category [MAN]  | 1      |
| Support process category [SUP]   | 1      |
| Organization process category [ORG]  | 1      |
| Training based on ISO/IEC TR 15504   | 3      |
| <b>Experience</b> (Maximum = 5, Minimum = 3)   |        |
| Customer/Supplier process category [CUS]   | 1      |
| Engineering process category [ENG]   | 1      |
| Management process category [MAN]  | 1      |
| Support process category [SUP]   | 1      |
| Organization process category [ORG]  | 1      |

Table G.3 — Validation of the software process against a checklist

| Items to validate       | Adequate |           |     |         | Items to Examine   | Notes and Commentary   |
|-------------------------|----------|-----------|-----|---------|--|--|
|                         | Fully    | Partially | Not | Unknown |  |  |
| <b>Software process</b> |          |           |     |         |  |  |
| a. Education            |          |           |     |         | <ul style="list-style-type: none"> <li>• Education accreditation</li> <li>• Degree earned</li> <li>• Number of credit hours</li> <li>• Subject studied</li> </ul>  | Base or higher degree in a software related discipline preferred.  |
| b. Training             |          |           |     |         | <ul style="list-style-type: none"> <li>• Training supplier</li> <li>• Type (e.g. video based, instructor led )</li> <li>• Classroom hours</li> <li>• Subject matter</li> <li>• Other assessment models</li> </ul>  | Training and education alone are not sufficient to become a competent assessor.  |
| c. Experience           |          |           |     |         | <ul style="list-style-type: none"> <li>• Covers assessment scope</li> <li>• Expertise in at least one process</li> <li>• Business domain</li> <li>• Application domain</li> <li>• Process variants, if applicable</li> <li>• Other assessment accreditation</li> <li>• Level of responsibility attained</li> </ul> | Experience in specific process categories or processes which are applicable to the assessment scope should be indicated. |

Table G.4 — Validation of assessment technology against a checklist

| Items to validate            | Adequate |           |     |         | Items to Examine   | Notes and Commentary   |
|------------------------------|----------|-----------|-----|---------|--|--|
|                              | Fully    | Partially | Not | Unknown |  |  |
| <b>Assessment Technology</b> |          |           |     |         |  |  |
| a. Education                 |          |           |     |         | <ul style="list-style-type: none"> <li>• Educational Institution</li> <li>• Degrees or certificate earned</li> <li>• Classroom hours</li> </ul>  | Formal education may be used to gain understanding of ISO/IEC TR 15504. Education alone is insufficient to become a competent assessor.          |
| b. Training                  |          |           |     |         | <ul style="list-style-type: none"> <li>• Trainer credentials</li> <li>• Type (video, instructor led etc.)</li> <li>• Coverage (clause 6.3):               <ul style="list-style-type: none"> <li>– Components of ISO/IEC TR 15504</li> <li>– The reference model</li> <li>– Compatible models</li> <li>– Performing assessments</li> </ul> </li> </ul>     | Training may be used to obtain knowledge of the components of ISO/IEC TR 15504; assessment methodologies; managing and conducting an assessment. |
| c. Experience                |          |           |     |         | <ul style="list-style-type: none"> <li>• Previous assessments conducted</li> <li>• Previous assessment and assessor evaluations</li> <li>• Assessment methodologies used</li> <li>• Satisfied the basis to be a provisional assessor</li> <li>• Creating an assessment methodology, if applicable</li> <li>• Assessment tools and methodologies</li> </ul> | This validates the set of experience for consideration of an assessor as a competent assessor.   |

Table G.5 — Validation of personal attributes against a checklist

| Items to validate          | Adequate |           |     |         | Items to Examine   | Notes and Commentary  |
|----------------------------|----------|-----------|-----|---------|--|---|
|                            | Fully    | Partially | Not | Unknown |  |   |
| <b>Personal Attributes</b> |          |           |     |         |  |   |
| a. Education               |          |           |     |         | <ul style="list-style-type: none"> <li>• Education accreditation</li> <li>• Degree earned</li> <li>• Number of credit hours</li> </ul>   | Formal education may include courses in ethics or business philosophy.  |
| b. Training                |          |           |     |         | <ul style="list-style-type: none"> <li>• Training supplier</li> <li>• Type (e.g. video based, instructor led)</li> <li>• Classroom hours</li> <li>• Subject matter: <ul style="list-style-type: none"> <li>– Total Quality Management</li> <li>– effective meetings</li> <li>– team building</li> <li>– communication skills</li> <li>– change management</li> </ul> </li> </ul> | Look for training completion, understanding and application of principles.  |
| c. Experience              |          |           |     |         | Assessment evaluations<br>Presentations<br>Writing skills<br>Leading change (self-assessments)   | Experience is the most reliable indication that an individual possesses the personal attributes desired of an assessor. |

**Key:**

**Fully adequate:** The information submitted clearly demonstrates that the assessor has the competence in the specific area to successfully perform assessments conducted according to the provisions of ISO/IEC TR 15504.

**Partially adequate:** The information submitted indicates that the assessor has at least some of knowledge and skills necessary to successfully perform assessments conducted according to the provisions of ISO/IEC TR 15504. Additional information may be requested. Alternately, the composition of the assessment team may be altered to include individuals whose knowledge and skills can augment those of the assessor.

**Not adequate:** The information submitted clearly indicates that the assessor does not possess the knowledge and skills in the specific areas to successfully perform assessments conducted according to the provisions of ISO/IEC TR 15504.

**Unknown:** The information submitted does not address the specific knowledge, skills and experience outlined in this part of ISO/IEC TR 15504. Additional information may be needed before a determination can be made.



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## ICS 35.080

**Descriptors:** data processing, information interchange, computers, computer software, estimation, process assessment, rules (instructions).

Price based on 22 pages

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